UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/255,352	02/23/1999	SUMIYO TANAKA	15162/00200	8382

24367 7590 02/20/2004		

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ART UNIT	PAPER NUMBER
2177	

DATE MAILED: 02/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

UNITED STATES PATENT AND TRADEMARK OFFICE

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FEB 2 0 2004

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Paper No. 26

Application Number: 09/255,352
Filing Date: February 23, 1999
Appellant(s): TANAKA, SUMIYO

Douglas A. Sorenson, Reg. No. 31,570
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed December 18, 2003.

(1)   Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2)   Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly

affect or be directly affected by or have a bearing on the decision in the pending appeal

is contained in the brief.

(3)   Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4)   Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection

contained in the brief is correct.

(5)   Summary of Invention

The summary of invention contained in the brief is correct.

(6)   Issues

The appellant's statement of the issues in the brief is correct.

(7)   Grouping of Claims

Appellant's brief includes a statement that claims 1-33 do not stand or fall

together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8)   Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9)   Prior Art of Record

6,246,804   Sato et al.   06-2001

(10)   Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-32 are rejected under 35 U.S.C. 102(e) as being anticipated by Sato et

al. ('Sato' hereinafter), US Patent 6,246,804. This rejection is set forth in prior Office

Action, Paper No. 19.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1-32 are rejected under 35 U.S.C. 102(e) as being anticipated by US

Patent 6,246,804 B1 issued to Sato et al. ("Sato").

With respect to claim 1, Sato teaches, an image database storing a plurality of

database images (col. 27 lines 20-55) of database,... (Abstract, col. 1 lines 7-67); 'a

specifying controller (col. 5 lines 32-67)for specifying a plurality of key images used to

specify,...' as specifying a controller (Fig. 1) for storing plurality of images in a plurality of

features in the image file. Each features of image has designated color, size of the color

(key) etc (Abstract, lines 1-9). 'an extracting controller (col. 2 lines 13-22) for extracting

common feature values of common key,...' as extracting a plurality of images from

correctly matched (common) (col. 14, lines 1-4, Abstract, Fig. 21).

a calculating (col. 1 lines 27-43) controller for comparing the common feature

values, extracted by the extracting controller, with the feature values of the plural

database image,...(col. 1 lines 15-37) calculate similarities between the common

feature,...(col. 27 lines 32-67) feature values (col. 1 lines 15-col. 2 lines 53, col. 18 lines

55 to col. 19 lines 7); and

a searching controller (col. 5 lines 32-67) for retrieving (col. 1 lines 7-67) from

the database images one of the images which is similar to the key image,.... (col. 21

lines 28 to col. 22 lines 13, Fig. 31-32).

With respect to claim 7, Sato teaches, an image database storing a plurality of

database images (col. 27 lines 20-55) to be searched for (Abstract, col. 1 lines 7-67);

a specifying controller (col. 5 lines 32-67) for specifying a plurality of key images

used to specify search conditions (col. 1 lines 7-67, Abstract);

a first calculating controller (col. 5 lines 32-67) for comparing all of the key

images, specified by the specifying controller, with respective feature values of the

database images to thereby calculate similarities there between (col. 1 lines 7 to col. 2

lines 53, Abstract);

a second calculating controller (col. 5 lines 32-67) for selecting a particular key

image from the plural key images specified by the specifying controller and for

comparing the particular key image with the database images to thereby calculate

similarities there between (col. 1 lines 7 col. 2 lines 53, Abstract);

a third calculating controller for calculating a final similarity for use in searching based on the similarities calculated respectively by the first and second calculating controllers (col. 5 lines 32-67, col. 1 lines 7 to col. 2 lines 53); and

a searching controller for retrieving one of the database images (col. 27 lines 20-67), which is similar to the particular key image, based on the final similarity calculated by the third calculating controller (col. 1 lines 7 to col. 2 lines 53, col. 5 lines 32-67). With respect to claim 27, Sato teaches, storing a plurality of database images (col. 27 lines 20-55) to be searched for in an image database (col. 1 lines 7-67, Abstract);

specifying a plurality of key images used to specify search conditions by means of a specifying controller (col. 5 lines 32-67);

comparing all of the key images, specified by the specifying controller, with respective feature values of the database images to thereby calculate similarities there between, by means of a first calculating controller (col. 5 lines 32-67, col. 1 lines 7-67);

selecting by means of a second calculating controller, a particular key image from the plural key images specified by the specifying controller and for comparing the particular key image with the database images to thereby calculate similarities there between (col. 18 lines 55 to col. 19 lines 7, col. 1 lines 7-67);

calculating, by means of a third calculating image searching program, said program controller, a final similarity for use in searching based on the similarities calculated respectively by the first and second calculating controllers (col. 1 lines 7 col. 2 lines 43, col. 5 lines 32-67); and

retrieving by means of a searching controller, one of the database images, which is similar to the particular key image, based on the final similarity calculated by the third calculating controller (col. 1 lines 7-67, col. 5 lines 32-67, col. 27 lines 20-55, Abstract).

Claims 4, 11, 14, 17, 21, 24 and 31 have same subject matter as of the above claims and essentially rejected for the same reasons.

Claim 32 has same subject matter as of claims above except "plurality of key images which most resembles a desired image" and Sato teaches at col. 2 lines 31-39 and essentially rejected for the same reasons.

As to claim 2, an extracting means for extracting a plurality (col. 2 lines 13-17) of types of the feature quantities from the respective key images specified by the specifying controller (Abstract, col. 1 lines 7 col. 2 lines 53);

a selecting means for comparing the feature quantities, extracted by the extracting means, among the plural key images specified by the specifying controller to thereby select at least one of the types of the feature quantities (Abstract, col. 27 lines 20-40); and

a determining means for determining the common feature quantities based on the at least one type of the features quantities selected by the selecting means (Abstract, col. 1 lines 7 to col. 2 lines 53).

As to claim 3, the means is operable to compare the feature of the same types among the plural key images by the specifying controller and wherein the determining means is operable to calculate an average value of the feature quantities of the plural key image with respect to the types of the feature quantities selected by the selecting

means, to thereby determine the calculated average value as representing the common feature quantities (col. 27 lines 20-55, col. 5 lines 32-67, col. 27 lines 20-53, Abstract).

As to claim 5, the selecting controller is operable (col. 5 lines 32-67) to select as a particular one of the plural specified key images, the key images which most resemble to the database images being searched for (col. 1 lines 7- col. 2 lines 53).

As to claim 6, the calculating controller is operable to calculate a plurality of types of the feature quantities from the plural key images and then to calculate a degree of similarity (col. 18 lines 55 to col. 19 lines 7) by comparing the feature quantities with the database images (col. 27 lines 20-55) for each type, and wherein the selecting controller selects, as the particular key image from the plural specified images, the key images which most resemble to the database images being searched with respect to an average value of degrees of similarities calculated by the calculating means for each type of the feature quantities (col. 1 lines 7 to col. 2 lines 53, col. 5 lines 32-67).

As to claim 8, the third calculating controller is operable (col. 5 lines 32-67) to increase a weight of the degree of similarity, calculated by the first calculating controller, to a value greater than that of the degree of similarity, calculated by the second calculating controller, to thereby calculate the final degree of similarity (col. 18 lines 55 to col. 19 lines 7, col. 1 lines 7 to col. 2 lines 43)).

As to claim 9, the first calculating controller (col. 5 lines 32-67) is operable to extract the common feature quantities of the image common to all of the key images, and to compare those common feature quantities with the database image to thereby

calculate the degree of similarity (col. 18 lines 55 to col. 19 lines 7, col. 1 lines 7-67, Abstract).

As to claim 10, the second calculating controller is operable (col. 5 lines 32-67) to select the key images most similar to the database image (col. 27 lines 20-67) from the key images and to calculate the degree of similarity (col. 18 lines 55 to col. 19 lines 7, Abstract).

As to claim 12, the extracting step includes the sub-steps of extracting a plurality of types of the feature quantities from the respective key images specified by the specifying controller (col. 5 lines 32-67); comparing by means of a selecting means the feature quantities, extracted by the extracting sub-step, among the plural key images specified by the specifying controller to thereby select at least one of the types of the feature quantities (col. 1 lines 7 col. 2 lines 53, Abstract); and determining the common feature quantities based on the at least one type of the features quantities selected by the selecting means (col. 18 lines 55 to col. 19 lines 7).

As to claim 13, the selecting means is operable (col. 5 lines 32-67) to compare the feature quantities of the same types among the plural key images specified by the specifying controller and wherein the determining means is operable to calculate an average value of the feature quantities of the plural key image with respect to the types of the feature quantities selected by the selecting means, to thereby determine the calculated average value as representing the common feature quantities (col. 1 lines 7 to col. 2 lines 43, Abstract);

As to claim 15, "step of specifying includes,..." at col. 2 lines 13-64.

As to claim 16, "the calculating controller,... " at Abastract and

"the selecting controller,..." at col. 2 lines 13-64.

As to claim 18, the third calculating controller is operable to increase a weight of

the degree of similarity (col. 18 lines 55 to col. 19 lines 7), calculated by the first

calculating controller, to a value greater than that of the degree of similarity, calculated

by the second calculating controller, to thereby calculate the final degree of similarity

(col. 5 lines 32-67, col. 1 lines 7-67).

As to claim 19, the first calculating controller is operable to extract the common

feature (Abstract) quantities of the image common to all of the key images, and to

compare those common feature quantities with the database image to thereby calculate

the degree of similarity (col. 18 lines 55 to col. 19 lines 7, col. 5 lines 32-67).

As to claim 20, the second calculating controller is operable (col. 5 lines 32-67)

to select the key images most similar to the database image from the key images and to

calculate the degree of similarity (col. 1 lines 7 to col. 2 lines 53, col. 27 lines 20-55).

As to claim 22, the extracting controller includes an extracting means for

extracting a plurality of types of the feature quantities from the respective key images

specified by the specifying controller (col. 5 lines 32-67); a selecting means for

comparing the feature quantities, extracted by the extracting sub-step, among the plural

key images specified by the specifying controller to thereby select at least one of the

types of the feature quantities (col. 1 lines 7-67 , Abstract); and a determining means

for determining the common feature quantities based on the at least one type of the

features quantities selected by the selecting means (col. 18 lines 55 to col. 19 lines 7,

Abstract).

As to claim 23, the selecting means is operable to compare the feature

quantities of the same types among the plural key images specified by the specifying

controller and wherein the determining means is operable to calculate (col. 5 lines 32-

67) an average value of the feature quantities of the plural key image with respect to the

types of the feature quantities selected by the selecting means, to thereby determine

the calculated average value as representing the common feature quantities (col. 18

lines 55 to col. 19 lines 7, Abstract)

As to claim 25, "instruction for retrieving,..." at col. 2 lines 13-64.

As to claim 26, "comparing includes,... " at Abastract and "retrieving include,..."

at col. 2 lines 13-64.

As to claim 28, the third calculating controller is operable to increase a weight of

the degree of similarity, calculated by the first calculating controller, to a value greater

than that of the degree of similarity, calculated by the second calculating controller, to

thereby calculate the final degree of similarity (col. 18 lines 55-67, Abstract, col. 1 lines

7-67).

As to claim 29, the first calculating controller is operable to extract the common

feature quantities of the image common to all of the key images, and to compare those

common feature quantities with the database image to thereby calculate the degree of

similarity (col. 18 lines 55 to col. 19 lines 7, col. 1 lines 7 to col. 2 lines 43).

As to claim 30, the second calculating controller (col. 5 lines 32-67) is operable to

select the key images most similar to the database image from the key images and to

calculate the degree of similarity (col. 18 lines 55 to col. 19 lines 7, col. 1 lines 7 to col. 2

lines 43).

Allowable Subject Matter

Claim 33 is objected to as being dependent upon a rejected base claim, but

would be allowable if rewritten in independent from including all of the limitations of the

base claim and any intervening claims.

(11)   Response to Argument

The Examiner respectfully traverses Appellant's argument regarding the Sato

Patent (6,246,804).

I. Response to Appellant's Argument Regarding claims 1-32 that Sato Fails

to Disclose "a specifying controller for specifying a plurality of key images".

Appellant's specification addresses image searching system for finding an image

based on a plurality of specified images.

Plurality of key images specified by a user are read (step S41). Feature

quantities of each key image are extracted from the image database 50 (step 42).

Feature quantities of plural kinds such as color, shape, texture and so on are obtained

from each key image (see specification page 21, lines 12-22).

Sato discloses image retrieval method and apparatus which can efficiently

retrieve image data when a search region in image data is divisionally extracted as a

pluralilty of regions (see col. 2, lines 15-17, Sato).

Appellant argued that Sato does not disclose: "a specifying controller for

specifying a plurality of key images", the Examiner respectfully disagrees. As stated by

Appellant, feature quantities for the selected images are retrieved from the database 50.

Feature quantities include color, shape, texture etc (see Appeal Brief page 4, lines 4-5).

Therefore, the image is for color, shape, texture etc.

Similarly, Sato teaches searching for a desired image in such a manner that

edge information of a region of an image or figure pattern or color information of a

surrounding region is input as image description information (see col. 2, lines 32-34,

Sato). Specifying a controller (Fig. 1) for storing plurality of images in a plurality of

features in the image file. Each features of image has designated color, size of the color

(key) etc (Abstract, lines 1-9).

II. Appellant also argued that Sato does not disclose, "an extracting

controller for extracting common key images feature values for common key

image features that are common to the plurality of key images and image search

criteria". The Examiner respectfully disagrees.

Accordingly, to Sato as stated above and image search from regions and

extracting a plurality of images from correctly matched (common). Plurality of images

has been specified to extract for the common key image (col. 14, lines 1-4, Fig. 21).

III. Appellant also argued that Sato does not disclose, "specifying a plurality of key images, determining common feature values of those key images and comparing those common feature values to an image database". The Examiner respectfully disagrees.

Accordingly, to Sato as stated above stated above and searching a plurality of images stored in an image file for a desired image are disclosed. When a designated image for designating an image to be retrieved for is input, and its color is designated, the sizes and colors are compared between description information which stores the feature of each of regions obtained by dividing each of images to be searched stored in the image file, and feature data of the designated image. The regions, which are determined to be included in the designated image, of image data are obtained, and the similarities between the obtained regions of image data and the designated image are calculated (see col. 2, lines 15-21 and Abstract, lines 1-12 et seq).

IV. Appellant also argued the anticipation of the cited reference.

Examiner respectfully submits that Sato discloses or suggests all the limitations of the pending claims 1-32. Therefore, Sato's patent properly anticipated the applicant's claimed invention.

V. Appellant also argued that Sato does not disclose, "a software program including instructions of specifying a plurality of key images, extracting common feature values and comparing the extracted common feature values to the database images". The Examiner respectfully disagrees.

Accordingly, to Sato as stated above stated above and the image processing apparatus comprises a CPU 1 for executing image retrieval processing, a ROM 2 for storing a control program and a processing program to be executed by the CPU 1, a RAM 3 used as work areas of the control program and the processing program, a file system 4 comprising a magnetic disk, a magneto-optical disk, or the like, which stores image files 109 for storing image data to be searched, and description files 110 for describing the features of image data in the image files 109 to be tested, a retrieval processing memory 5 as a RAM used for retrieval processing, a display (DP) 111 for displaying retrieved images or displaying messages required for the search processing, a keyboard (KB) 7 used for inputting various commands to perform a retrieval operation, a mouse 8 used as an auxiliary input device for the retrieval operation, a printer 9 for outputting retrieved results, a similarity calculation processor 10 for calculating the similarity between an input image pattern and image data, a disk controller 6 for controlling a disk drive unit 12, and a CPU bus 11 for interconnecting the respective constituting elements. The control program to be executed by the CPU 1 stored in a hard disk 13 or a floppy disk (FD) 14, and be loaded into the RAM 3 when it is executed (see col. 5, lines 32-55, Sato).

Conclusion

The reference discloses the claimed specifying a plurality of key images,

extracting common feature values and comparing the extracted common feature values

to the database images. Last Sato anticipated all the pending claims 1-32. In light of the

foregoing arguments, the Examiner respectfully requests the honorable Board of

Appeals and Interferences to sustain the rejection.

Respectfully submitted,

Mohammad Ali

Examiner, AU: 2177

February 12, 2004

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